extent and maturity of forests in the surrounding watershed are important in maintaining these conditions. Mature forests trap water and release it slowly and steadily to the bittercress habitat. They also moderate flooding and, when they shade the stream habitat and surrounding slopes, they also modify temperature. During the 1996 field surveys, the bittercress was almost always found in forested portions of watersheds and absent from cleared areas along the same watershed. It was also observed that the bittercress would often reappear along the same watershed where forest quality once again improved.

Habitat alteration is the greatest threat to this species. Degradative alterations would include heavy logging, introduction of livestock to stream areas, formation of impoundments, stream channelization, and accidental herbicide drift/runoff from adjacent agricultural areas. Secondary threats include increases in flooding intensity and frequency from logging and from agricultural runoff; alteration of microenvironment from clearing near streams; and increases in non-native, competitive plants such as Japanese honeysuckle in response to clearing.

From late May to mid-June, mature plants produce copious numbers of viable seeds which drop near the parent, often in water. Boyer (1996) found seeds germinate in as little as four days, with a germination rate as high as 80%, in either soil or water. In suitable locations, establishment of plants after germination can be high; large numbers of young plants were observed on several occasions during the 1996 inventory (K. Bridle and S. Oakley, pers. obs.). However, it is not yet known whether, or for how long, seeds can remain viable in a soil seed bank. If this species does not maintain a viable seed bank, a population may not be able to recolonize suitable habitat after severe disturbances. An inability to maintain a seed bank might explain the curious absence of the species from apparently suitable habitats within its Stokes County-Patrick County range.

*Cardamine rotundifolia* (mountain watercress)

Mountain watercress, a State Candidate for listing, is somewhat similar to other members of the genus Cardamine that occur in Stokes County, especially to the Federally Endangered small-anthered bittercress (*Cardamine micranthera*). It ranges from Pennsylvania, western New York, Ohio, and Kentucky southward to the mountains and upper Piedmont of Virginia and North Carolina. It is known from only 12 locations in North Carolina, only two of which are in the Piedmont. The Piedmont occurrences are both in Stokes County.

Its habitat is along intermittent to perennial streams in seepages, where it grows on streambanks and sand, silt, and gravel bars, and in swampy floodplain depressions. It generally requires a cool and continually moist microenvironment from April through July, when it flowers and fruits. Well-forested watersheds generally produce these conditions and help to moderate stream flood intensity and frequency, which can dislodge plants from streambeds. Threats to mountain watercress are similar to those for small-anthered bittercress.